

0047711

**DON'T SAY IT --- Write It!**

DATE: September 3, 1997

TO: Jeanne Wallace

B5-18

FROM: Ellen Mattlin *EM*

A5-15

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Administrative Record H6-08

**SUBJECT:**

3718-F Alkali Metal Treatment and Storage Facility Data Evaluation  
and Recommendations Report

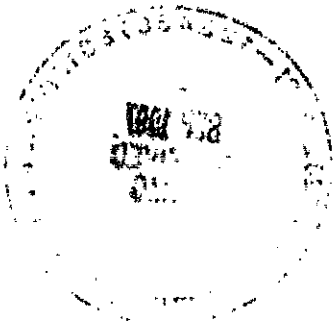
A copy of the final draft data evaluation and recommendations report is attached. This report includes a summary of the analytical results obtained for all soil sampling conducted at the 3718-F Alkali Metal Treatment and Storage Facility. A copy of the data validation package is provided as Appendix C. As discussed in the report, the raw analytical data is retained by Waste Management Federal Services of Hanford and is available upon request.

If you have any questions please don't hesitate to call me. Thank you for your attention.

Attachment: Draft; HNF-SD-ENV-ER-002, Rev.0



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LIST OF TERMS

3718-F TSF	3718-F Alkali Metal Treatment and Storage Facility
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HEIS	Hanford Environmental Information System
HF	Hanford Facility
ICP	Inductively Coupled Plasma
IRIS	Integrated Risk Information System
MTCA	Model Toxics Control Act
NIOSH	National Institute for Occupational Safety and Health
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RTECS	Registry of Toxic Effects of Chemical Substances
TSD	treatment, storage, and disposal
WAC	Washington Administrative Code

2018-1

# 3718-F ALKALI METAL TREATMENT AND STORAGE FACILITY SOIL SAMPLING DATA EVALUATION REPORT

## 1.0 INTRODUCTION

This report provides a summary of the soil sampling and analysis performed in support of closing the 3718-F Alkali Metal Treatment and Storage Facility (3718-F TSF) and recommends that this waste treatment and storage unit be clean closed. Specifically, this report addresses Hanford Facility (HF) Sitewide RCRA Permit Condition (Permit Condition V.13.B.1);

"The Department will consider removal and decontamination complete when the concentrations of dangerous waste, dangerous waste constituents, and dangerous waste residues, which originated from the 3718-F Alkali Metal Treatment and Storage Facility, throughout the areas affected by releases from this unit do not exceed numeric cleanup levels for soils, groundwater, surface water, and air, determined using residential exposure assumptions according to the MTCA, Method A or B."

The recommendation for closure is based on the analytical results for the constituents of concern defined in the unit closure plan (DOE 1995) for the soil sampling matrix defined in the unit sampling and analysis plan (HNF 1997). An analytical results package is attached and includes: information regarding polychlorinated biphenyl analysis (Appendix A); a copy of the field notes (Appendix B); and the data validation package (Appendix C). The raw data package is retained by Waste Management Federal Services of Hanford (Sample Management Group). A copy of the raw data package is available upon request.

### 1.1 SUMMARY OF RESULTS

To meet the criteria for clean closure at the 3718-F TSF, the analytical results must verify that the concentrations of the treatment residue in the soil is equal or below the action levels specified in the HF RCRA Permit Conditions. These conditions have been quantified in the sampling and analysis plan (HNF 1997) and are discussed in Section 3.0. As shown in Table 1, the measured concentrations for all soil samples are well below the action levels.

### 1.2 REGULATORY BACKGROUND

The 3718-F TSF is classified as a Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal Facility. The unit is regulated by the Washington State Department of Ecology in accordance with WAC 173-303, "Dangerous Waste Regulations." A plan for closure of this unit was included in the HF Sitewide RCRA Permit, Revision 3, on December 26, 1996.

Table 1. Soil Sampling Results for Constituents of Concern  
Soil Sampling and Analysis Plan (HNF-DS-ENV-AP-004, Rev.0)

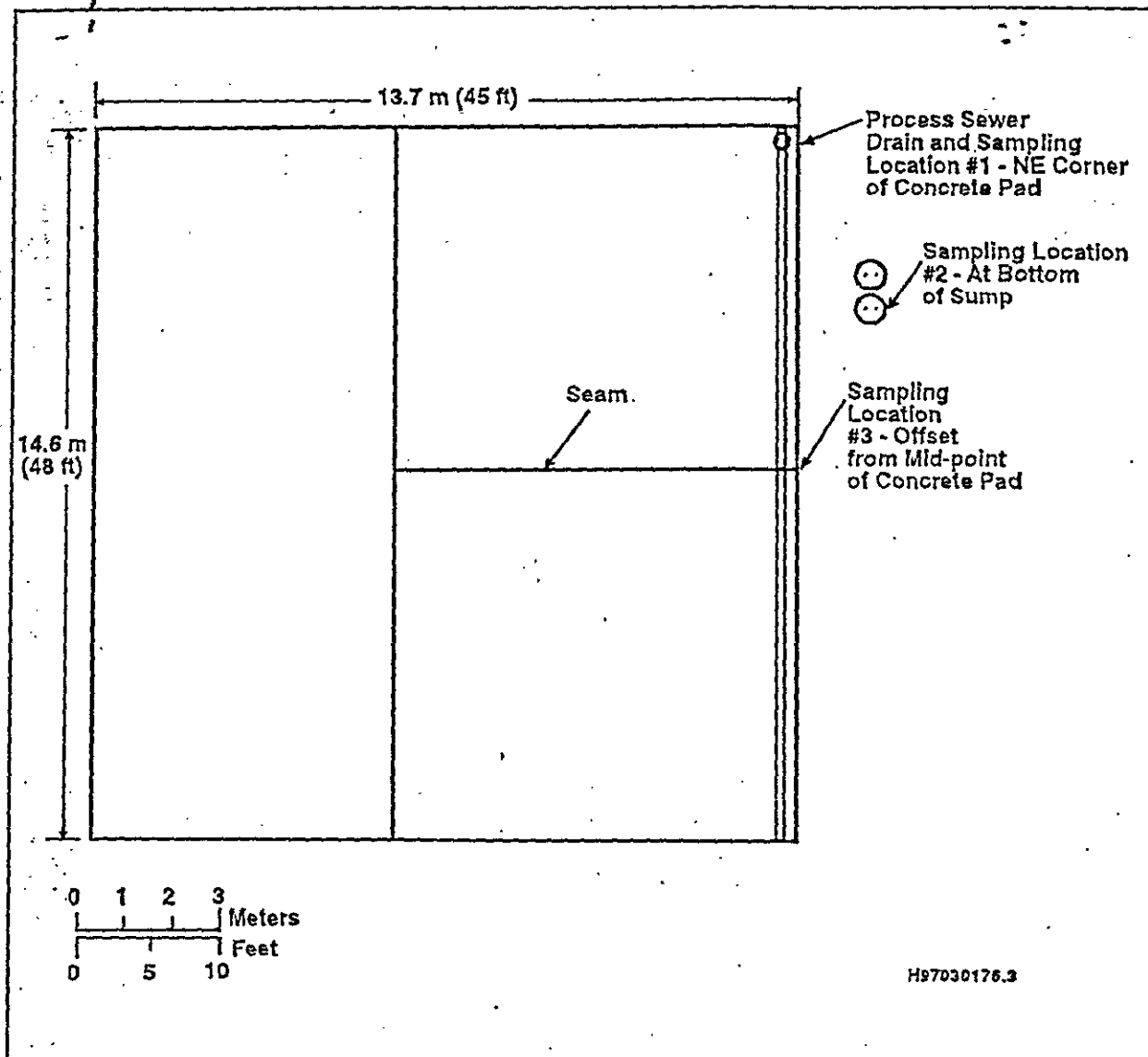
Location	Sample #	Constituent Concentration		
		Sodium	Lithium	Potassium
Northeast corner of pad	BOJHZ4	175 mg/kg	9.1 mg/kg	1020 mg/kg
Northeast corner of pad (duplicate)	BOJHZ7	174 mg/kg	9.6 mg/kg	942 mg/kg
Drain sump	BOJHZ5	531 mg/kg	29.0 mg/kg	746 mg/kg
Concrete pad midpoint	BOJHZ6	194 mg/kg	33.1 mg/kg	1050 mg/kg
Concrete pad midpoint (duplicate)	BOJHZ8	218 mg/kg	30.3 mg/kg	1360 mg/kg
ACTION LEVEL (HFN 1997)		1390 mg/kg	37 mg/kg	3090 mg/kg

## 2.0 SAMPLING

Soil sampling was performed on April 24, 1997. As discussed in the sampling and analysis plan, a phased approach was applied. Phase I consisted of collecting a limited number of soil samples to determine whether dangerous waste that had resulted from the operations of the facility was released to the soil column. If Phase I samples had indicated that contaminants of concern are present above cleanup levels, the sampling and analysis plan would have been revised to include a second phase of sampling, which would address the full nature and extent of soil contamination. Under Phase I, soil samples were collected from three locations representative of possible contamination pathways. Split samples were collected and provided to the Department of Ecology (Ecology) for independent analysis. Duplicate samples were collected at two of the three locations. A field blank was also collected. A copy of the field notes compiled during the collection of these samples is provided as Appendix B.

### 2.1 SAMPLE LOCATIONS

A description of the soil sampling locations is provided in the sampling and analysis plan (HNF 1997). The soil sampling locations are provided in Figure 1.



# DESCRIPTION OF SAMPLING LOCATIONS

Two sample locations are at the northeast corner of the concrete pad. One of these locations (location 1) is in the soil next to the process sewer drain and the second (location 2) is at the bottom of the separator drain sump, which is located approximately 3 meters (9 feet) south of the northeast corner. A third sample location (location 3) is near the mid-point of the concrete pad, which is directly south of the expansion joint that runs east/west. All samples will be collected at a sample interval from 15 centimeters (6 inches) to 46 centimeters (18 inches). Two duplicate soil samples will be collected; one at the northeast corner and the other at sample location 3. All material placed in the sample container will be less than 12 millimeters (0.5 inches) in diameter.

Figure 1. Soil Sampling Locations.

## 2.2 FIELD SAMPLING

As proposed in the sampling and analysis plan, soil samples were collected from three locations. Referring to Figure 1, location 1 is in the soil next to the process sewer drain. Location 2 is at the bottom of the separator drain sump, which is located a few feet south of the northeast corner. Location 3 is near the mid-point of the concrete pad, which is just south of the expansion joint that runs east/west. Samples were collected at a depth of 15 cm to 46 cm below ground surface at locations 1 and 3. A metal plate welded on to the bottom of the sump prevented sample collection over a 30 cm interval at location 2. A field decision was made to collect the sample from the 15 to 20 cm of material present at the bottom of the sump above the metal plate. All cognizant field personnel representing Ecology, the Department of Energy, and contractor personnel agreed to the change. Duplicate samples were collected at locations 1 and 3 in accordance with the Sampling and Analysis Plan. An equipment blank consisting of a deionized water rinse of sampling equipment was also collected.

Each sample was assigned a sample number by the Hanford Environmental Information System (HEIS). The following HEIS numbers were assigned; the primary soil sample at Sample Location #1 (BOJHZ4), the co-located duplicate sample at Sample Location #1 (BOJHZ7), the soil sample at Sample Location #2 (bottom of the sump) (BOJHZ5), the primary soil sample at Sample Location #3 (BOJHZ6), and the co-located duplicate sample at sample Location #3 (BOJHZ8). The field blank (water blank) was assigned a sample number (BOJHZ9).

Each soil sample was collected using clean hand tools. Each sample was labeled. The samples were sent to Quanterra Environmental Services, an Ecology approved laboratory. The samples were received by Quanterra, Richland and were transferred to Quanterra, St. Louis, for chemical analysis. All samples were analyzed using EPA Method 6010 within the holding times specified in the plan.

## 3.0 ACTION LEVELS

Action levels are defined in the sampling and analysis plan (HNF 1997), and are summarized in Table 1. The action levels were established in accordance with the residential exposure requirements provided in MTCA (WAC 173-340) Methods A or B (see amendment V.13.B.1) or use of a natural background concentration as specified in WAC 173-340-700(4)(d).

## 4.0 ANALYSIS

As stated in Section 1.1 and tabulated in Table 1, the concentration for all constituents of concern at all locations were measured in the laboratory to be well below the soil cleanup levels or action levels. The final analytical data package that included a description of the analytical results, analytical methods, quality control, and general comments as deemed

appropriate was received on July 24, 1997. The range in sodium concentration for the five soil samples varied from 174 mg/kg to 531 mg/kg. The range in total lithium varied from 9.1 to 33 mg/kg. The range in total potassium varied from 746 mg/kg to 1360 mg/kg. For all three metals, the range of concentration tends to be at the low end of the background concentrations, i.e., ~~discussed previously in Section 3.0.~~ Action Level.

## 5.0 DATA VALIDATION

The data package was validated by Golder Associates in accordance with Chapter 8.0 of *Data Validation Procedures for Chemical Analyses*. Level D validation was conducted. Level D validation for Inductively Coupled Plasma (ICP) metals consists of the following:

- Verification of required deliverables
- Verification of requested versus reported analyses
- Verification of lack of transcription errors
- Evaluation and quantification of results based on:
  - analytical holding times
  - matrix spikes
  - laboratory control samples
  - laboratory duplicates
  - analytical method blanks
  - matrix spike recoveries
  - initial and continuing instrument calibrations
  - calculation checks.

The data validation package was received on August 11, 1997, and is attached as Appendix C. As stated in the data validation package, a total of six samples were validated with a total of eighteen determinations reported. All determinations were deemed valid. No major deficiencies were identified during the data validation process. A minor deficiency was identified resulting in qualification of data. Sodium was detected in the preparation blank for sample BOJHZ9 and qualifies the associated result for sodium as non-detect. All sample results are considered acceptable for decision-making purposes.

## 6.0 FIELD QUALITY CONTROL RESULTS

Two duplicate samples and an equipment blank were collected in the field. A description of the sampling method is included in the field notes and is provided in Appendix B.

1 As shown in Table 1, the results for the duplicate samples taken at  
2 sample locations 1 and 3 are within the 35 % Relative Percent Difference  
3 precision criteria applied in data validation of metals results for soil  
4 samples.

5  
6 Sodium was initially detected in the equipment blank. However, during  
7 data validation, this result was qualified "U" (non-detect) because of the  
8 detection of sodium in the preparation blank for this sample. Detection of  
9 sodium in the preparation blank indicates that the sodium that was detected in  
10 the equipment blank was the result of laboratory contamination rather than  
11 field contamination. This indicates that the soil samples appear unaffected  
12 by the sampling equipment.

## 13 14 15 16 7.0 DATA EVALUATION

17  
18  
19 The sampling and analysis plan (HNF 1997), defined the approach that was  
20 used for comparing the concentration of dangerous waste, that originated from  
21 the operation of the 3718-F TSF with assigned health based action levels. The  
22 action levels for the constituents of concern are discussed in Section "3.0  
23 Action Levels." Any analytical data below the detection level, health-based  
24 action level, or Hanford Site Background threshold levels for soil is  
25 considered to signify that no additional cleanup action is necessary and that  
26 removal and or decontamination is complete.

27  
28 The analytical data for all five (5) soil samples and the defined action  
29 levels taking into consideration detection levels, health-based standards, and  
30 sitewide background are provided in Table 1. As shown in Table 1, the Hanford  
31 Site Background threshold values were defined as appropriate action levels for  
32 all three constituents of concern, lithium, sodium, and potassium. As  
33 summarized in Table 1, all measured concentrations were found to be below the  
34 defined action levels.

## 35 36 37 38 8.0 CONCLUSIONS

39  
40  
41 The analytical results for the 3718-F TSF soil samples verify that the  
42 concentration of all treatment activity residues (lithium, sodium, and  
43 potassium) are well below action levels. Consequently, a second phase of  
44 sampling is not required and it is recommended that the 3718-F TSD be clean  
45 closed.

9.0 REFERENCES

- DOE, 1995, *The 3718-F Alkali Metal Treatment and Storage Facility Closure Plan*, DOE/RL-91-35, Rev.2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE, 1995b, *Hanford Site Background: Part 1, Soil Background for Non-radioactive Analytes*, DOE/RL-92-24, Rev.3, Volumes 1 and 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- EPA, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency, Washington, D.C.
- Ecology, 1996, *Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC II). Update*, Publication #94-145, Update 1996, Washington State Department of Ecology, Lacey, Washington.
- HNF, 1997, *Soil Sampling and Analysis Plan for the 3718-F Alkali Metal Treatment and Storage Facility Closure Activities*, HNF-SD-ENV-AP-004, Rev. 0, Rust Federal Services of Hanford for Fluor Daniel Hanford, Richland, Washington.
- WAC 173-303, "Dangerous Waste Regulations," Washington Administrative Code, as amended.
- WHC, 1993, *Data Validation Procedures for Chemical Analysis*, WHC-SD-EN-SPA-002, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

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APPENDICES

- 1
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- 3 APPENDIX A. POLYCHLORINATED BIPHENYL INFORMATION
- 4 APPENDIX B. FIELD NOTES
- 5 APPENDIX C. VALIDATED DATA PACKAGE

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## APPENDIX A

## INFORMATION REGARDING POLYCHLORINATED BIPHENYLS IN 3718-F SOIL SAMPLES

At the 3718-F Treatment and Storage Facility (3718-F TSF) Project Managers Meeting on January 14, 1997, the Washington State Department of Ecology (Ecology) raised a concern about the potential for PCBs having been introduced to the 3718-F TSF waste stream during the treatment of laboratory type waste. Ecology postured that steel components may have been machined with oils containing PCBs.

On February 3, 1997 a meeting was held to provide first hand knowledge on the treatment of material at the 3718-F TSF. As discussed by an operator at the unit:

- All components treated had been exposed to a flowing sodium environment prior to treatment at the facility. It is highly unlikely that PCBs would be stable in a high temperature sodium environment.
- No freshly machined equipment was known to have been cleaned or treated at the 3718-F TSF.
- As documented in the 3718-F TSF closure plan, the waste stream from the treatment process was either drummed or disposed of in the 300 Area industrial sewer.

In support of RCRA closure activities at the unit, soil samples were collected at three locations. The soil samples were analyzed for the constituents of concern (based on the Part A Form 3 and the closure plan): sodium carbonate, lithium carbonate, and potassium carbonate. Ecology drew split samples, and analyzed them for metals and PCBs. On June 3, 1997, Ecology informed DOE-RL that analysis of the split samples indicated the presence of Aroclor 1254 at a concentration of 15 mg/kg in the separator drain sump. The measured concentration of Aroclor 1254 at the other two sample locations was less than 1 mg/kg. Follow-up analysis of DOE-RL's splits confirmed the presence and concentrations of Aroclor 1254 reported by Ecology. Aroclor 1254 results for the DOE-RL splits are shown in table A-1. During data validation, the Aroclor results were deemed acceptable for decision making purposes but should be considered as estimated quantities since the holding time had been exceeded for all five soil samples.

Based on the positive results for PCBs in the sump soil sample, an additional search for potential sources of PCBs at the 3718-F TSF was initiated.

The type of oils used for machining components cleaned at the facility was also investigated. Former 328 machine shop workers identified cutting fluids used in component manufacture. Material Safety Data Sheets (MSDS) were obtained for those cutting fluids used at the 328 machine shop and in the 272 machine shop from the late 1970's to the present time. A review of the MSDSs indicates that no PCBs were present in the cutting fluids. Due to concerns with chloride stress corrosion of stainless steel in a high temperature

environment, the presence of chlorides is strictly controlled on these components, therefore the presence of PCBs in the cutting oils used is extremely unlikely.

Table A-1. Concentration of Polychlorinated Biphenyls (Aroclor 1254) for 3718-F TSF Soil Samples

LOCATION	SAMPLE #	CONCENTRATION
		Aroclor 1254
Northwest corner of pad	BOJHZ4	0.088 mg/kg
Northeast corner of pad (dup)	BOJHZ7	0.330 mg/kg
Drain Sump	BOJHZ5	15.0 mg/kg
Concrete pad mid-point	BOJHZ6	0.038 mg/kg
Concrete pad mid-point (dup)	BOJHZ8	undetected

As discussed in the closure plan, waste alkali metals had been burned at the 3718-F TSF. The operators had mentioned that at times rags doused with a mixture of gasoline and diesel fuel had been used to help ignite the alkali metal waste. An investigation of this mixture revealed that a solution of 3 parts gasoline to one part diesel was used. Both the diesel fuel and gas that was used was obtained from fuel pumps both onsite and occasionally offsite. The rags that were used were either rags that had become soiled from use at the 3718-F TSF or were provided by the Hanford Laundry. Since PCBs were not present at the 3718-F TSF, the rags that were soiled due to use at the unit would not have contained PCBs.

Other potential activities in the vicinity of the 3718-F TSF which may have been the source of the PCB contamination include: hydraulic fluid leaks from industrial equipment, pesticide applications, leaking electrical equipment, or dust control using PCB contaminated oils. These potential sources were explored to the extent possible, but none could be confirmed as the source of contamination found in the soil. Due to the high stability of Aroclor 1254 in the environment and its property of tightly adhering to soil particles, the contamination may have been present for a long period of time.

The Hazardous Substance Data Bank was consulted for information on Aroclor 1254. According to this source, Aroclor 1254 was not manufactured or sold after 1977. It was used in a variety of applications, including hydraulic fluids, adhesives, dedusting agents, cutting oils, pesticides, sealants, caulking compounds, electrical capacitors, and transformers. Aroclor 1254 is also extremely stable in the environment, and will tightly adsorb to soil particles. Based on the information presented, it is concluded that Aroclor 1254 is not a dangerous waste constituent resulting from the operation of the 3718-F TSF.

1 Because PCBs are not included on the Part A for the 3718-F TSF and were not  
2 managed at the unit, PCBs should not be addressed during the closure of this  
3 facility. As discussed at the August 8, 1997 Project Manager Meeting,  
4 information regarding PCBs in soil at the 3718-F TSF will be provided to the  
5 300-FF-2 operable unit for their consideration in developing remedial  
6 alternatives for the site.

7  
8 To assist in the transfer of the 3718-F TSF to the Environmental Remediation  
9 Program a copy of this report will be provided to both the ER Project Manager  
10 for the 300-FF-2 operable unit and the Waste Identification Database (WIDs).  
11 In addition, to establish a basis for the handling and disposal of the soil at  
12 the bottom of the sump, the results of the laboratory analysis were provided  
13 to Waste Management Federal Services of Hanford (Technical Services) for  
14 designation. The sample was designated as non-dangerous based using WAC 173-  
15 303-100 protocol. This designation allows for the soil to be disposed as a  
16 solid waste. Accordingly, this waste can be disposed as a solid waste when  
17 the sump is either recycled or disposed at some future date.

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APPENDIX B

FIELD NOTES

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PROJECT 3718-F Alkali Metal TSDNotebook No. NM-SML-H1Continued From Page NONE

S.A.F.#: R97-032

Sample Date: 4-24-97

PROJECT TITLE: 3718-F Alkali Metal TSD

Shipment Date: 4-28-97

CHARGE CODE: B12LA

TYPE OF PROTOCOL: Sampling done to RCRA Protocol

CUSTOMER: John C (Jack) Sonnichsen RFSH Engineer

FIELD CONTACTS: Jack Sonnichsen 376-9956

PERSONAL: K.B. Hulse

SML Sampling Tech.

Kenneth J Young

SML Scientist

Tom Dillhoff

BWHC FFTF ECO

Lucinda Penn

BWHC Reg. Comp. FFTF

John Ludowise

CH2M Hill P.E.

Jon Bartz

Dept. of Ecology

PURPOSE:LOCATION:REFERENCE DOCUMENTS: HNF-SD-ENV-AP-004 Rev. 0

SAMPLE POINT: There were three sample points. Point #1 was located on the Northeast corner of the concrete pad. Sample BOJHZ4 and the co-located duplicate BOJHZ7 were taken from point #1. Point #2 was at the drain sump. There were two pipes in the ground. The north pipe contained water. The southern pipe was the drain sump. Sample BOJHZ5 was taken from point #2. Point #3 was the mid-point of the concrete pad just south of the expansion joint. Sample BOJHZ6 and co-located duplicate sample BOJHX8 were taken from point #3. Sample BOJHZ9 was an equipment blank taken prior to sampling with ASTM type II water.

SAMPLING METHOD: The Equipment blank was taken first by pouring ASTM type II water over the sample equipment into a sample bowl. A peristaltic pump with new tubing was used to circulate the water over the sampling equipment to insure all surfaces had been rinsed by the water. The vender certified clean bottles were then filled by pumping the water into the bottles.

Sample points 1 and 3 were sampled by removing the top six inches of soil with a spade. The sample was retrieved by coring into the soil with a two inch coring tool. The sample media was deposited into a bowl. Another core was taken to cover the complete sample interval of 6 to 18 inches and placed in the bowl. The sample media was then mixed and placed in vender certified clean sample bottles with a spoon. The co-located sample was then taken by retrieving two cores from along side of the hole from the first sample and placed in a different bowl. Dept. of Ecology (WDOE) requested a sample from each location. The WDOE sample bottle was filled with soil from both the sample and the co-located duplicate sample media.

Sample point 2 was to be taken six inches below the surface but because of a plate on the bottom the sample was taken from the available soil. About four inches for soil was in the bottom of the drain sump above the steel plate. A three inch coring tool was used to attempt to remove the top soil when the bottom plat was encountered. The soil that was taken while trying to remove the top soil was collected in a bowl. A two inch coring tool was used to retrieve more soil to be mixed with the soil taken out prior. The vender certified clean sample bottles were filled after the sample media was mixed with a spoon. A WDOE sample bottle was also filled.

ONE ATTACHMENT ON THIS PAGEContinued on Page 23

Read and Understood By

K.B. Hulse4-29-97

Date

Signed

NOTE: All sample equipment (bowls, spoons, shovels, spades) were stainless steel and had been cleaned to EII 5.5 procedure. New equipment was used at each sample point.

PPE: Blue coveralls, safety glasses, safety shoes, and surgeon gloves were worn.

WEATHER CONDITIONS: Sunny 55°F, wind 0-5 mph.

RADIATIONS READINGS: This area was determined as a radiation area and HPT coverage was not necessary. Rad screens sent to the on site lab showed no detectable radioactivity.

COMMENTS: Sample point #2 the drain sump was thought to not have a plate on the bottom. The sample interval was to be taken at 6 to 18 inches. Because of plated bottom the sample was taken from the soil on top of the plate as directed by Jack Sonnichsen with concurrence of Jon Bartz.

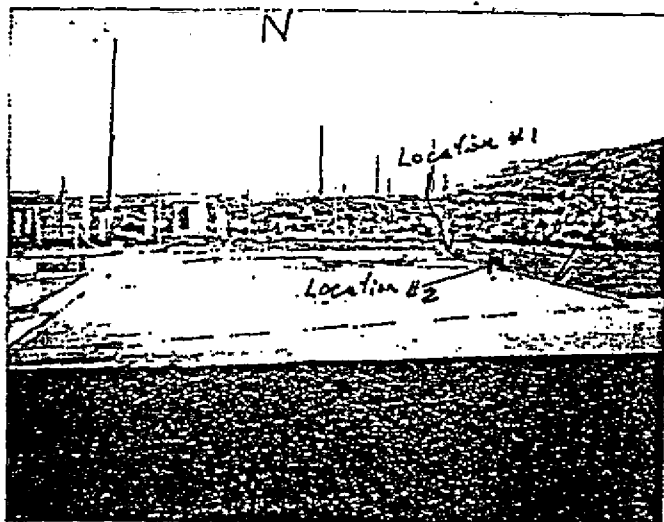
SHIPPING INFORMATION:

DESTINATION: Quanterra  
OFFSITE PROPERTY CONTROL # N/A  
C.O.C. # R97-032-1  
SAMPLE # BOJHZ4 thru HZ9

TRANSPORTATION Government Vehicle  
AIR BILL # N/A  
COOLER # SML-545  
Date shipped 4-28-97

DESTINATION: 222S  
C.O.C. # R97-032-2  
SAMPLE # BOJHZ4 thru HZ9

TRANSPORTATION Government Vehicle  
COOLER # SML-545  
Date shipped 4-24-97



4-24-97 3718 F Building Pool  
XBT

NINE PHOTOS ATTACHED  
ON PAGES 23, 25 + 26

TWO ATTACHMENTS ON  
THIS PAGE.

Continued on Page 24

Read and Understood By

KB Hulce KB Hulce 4-29-97

Signed

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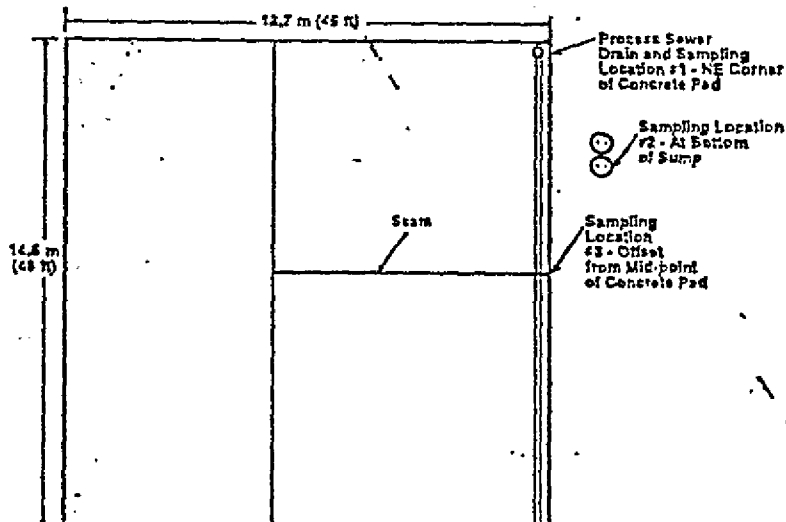
Date

PROJECT 3718-F Alkali Metal TSPNotebook No. WM-SML-H1Continued From Page 237024 4-29-97

Sample Number	Date Collected	Time	Number and Type of Containers	Analysis Required	Lot #
BOJHZ4	4-24-97	0840	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ4	4-24-97	0840	(1) 250 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium	L/250802050
BOJHZ4	4-24-97	0840	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A
BOJHZ5	4-24-97	0920	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ5	4-24-97	0920	(1) 250 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium	L/250802050
BOJHZ5	4-24-97	0920	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A
BOJHZ6	4-24-97	0940	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ6	4-24-97	0940	(1) 250 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium	L/250802050
BOJHZ6	4-24-97	0940	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A
BOJHZ7	4-24-97	0840	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ7	4-24-97	0840	(1) 250 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium	L/250802050
BOJHZ7	4-24-97	0840	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A
BOJHZ8	4-24-97	0940	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ8	4-24-97	0940	(1) 250 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium	L/250802050
BOJHZ8	4-24-97	0940	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A
BOJHZ9	4-24-97	0825	(1) 20 ml Poly	Activity Scan (Lab specific)	N/A
BOJHZ9	4-24-97	0825	(1) 500 ml Poly	ICP Metals (6010A) Lithium, Potassium, Sodium (HNO <sub>3</sub> )	L6113070
BOJHZ9	4-24-97	0825	(1) 20 ml Poly	Rad Screen (Lab specific) 222-S	N/A

7024 4-29-977024 4-29-97

Two ATTACHMENTS ON THIS PAGE.

Continued on Page 25

Read and Understood By

Signed

Date

Signed

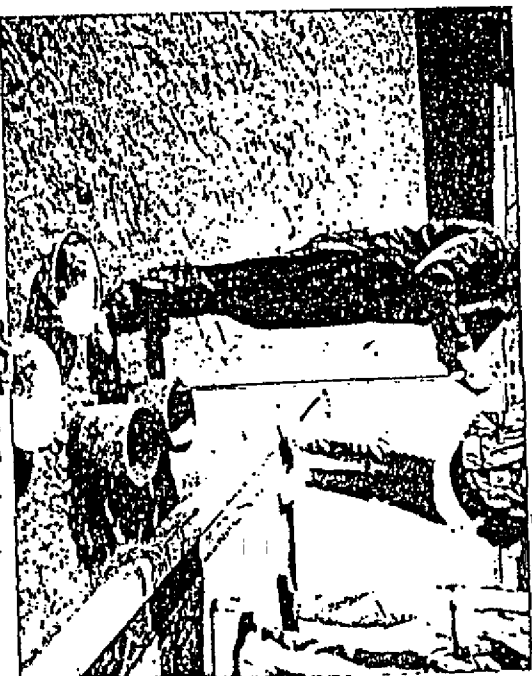
Date

KB Hulse 70244-29-97

3718-F Alkali Metal ISD

Notebook No. WM-524-41  
Continued from Page 24

7/8 24-4-29-97

4-24-97 Equipment Blank  
7/8 24-4-29-97NE Corner - 0840 Location #1  
4-24-97  
7/8 24-4-29-97NE Corner Location #1  
4-24-97  
7/8 24-4-29-97NE Corner - 0840 Location #2  
4-24-97  
7/8 24-4-29-97

FOUR ATTACHMENTS ON THIS PAGE

REPRODUCED BY

Continued on Page 26

7/8 24-4-29-97

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7/8 24-4-29-97

PROJECT 3718 F Alkali Metal TSD

NOV 4-29-87

Notebook No. WM-SML-41  
Continuation Page 25



0920 Location #2  
NOV 4-24-87



0935 - 4/24/87 Location #3  
NOV 4-24-87



0945 - Location #3  
NOV 4-24-87



1002 3718 F Building pad  
4-24-87  
NOV 4-24-87

NOV 4-27-87

Four ATTACHMENTS ON THIS PAGE

Read and Understood By

Continued on Page No.

NOV 4-29-87

Signed

Date

<b>Rust Federal Services Northwest</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				<b>C.O.C#</b> <b>K97-032-1</b>	
<b>Collector</b> HULSE, KARL		<b>Contact/Requestor</b> PENN, LUCINDA		<b>Tel. No.</b> 6-8991 <b>MSIN</b> N2-57 <b>FAX</b>			
<b>SAF Number</b> R97-032		<b>Sample Origin</b> 300 AREA		<b>Purchase Order/Charge Code</b>			
<b>Project Title</b> 3718-F Alkali Metal TSD		<b>Logbook #</b> WM-SML-H1		<b>Ice Chest #</b> SML-545 <b>Temp.</b>			
<b>Shipped To (Lab)</b> Quanterra		<b>Method of Shipment</b> Hand Delivered		<b>Bill of Lading/Air Bill No.</b> N/A			
<b>Protocol</b> RCRA		<b>Data Turnaround</b> 45 DAYS		<b>Offsite Property No.</b> N/A			

Sample No.	Lab. ID	A	Date	Time	No/Type Container	Sample Analysis	Perservative
D0J1124		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1124		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium	Cool to 4°C
D0J1125		S	4/24/97	0920	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1125		S	4/24/97	0920	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium	Cool to 4°C
D0J1126		S	4/24/97	0940	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1126		S	4/24/97	0940	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium	Cool to 4°C
D0J1127		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1127		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium	Cool to 4°C
D0J1128		S	4/24/97	0940	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1128		S	4/24/97	0940	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium	Cool to 4°C
D0J1129		W	4/24/97	0825	(1) 20 P	Activity Scan (Lab Specific)	None
D0J1129		W	4/24/97	0825	(1) 500 P	ICP Metals (6010A), Lithium, Potassium, Sodium	INCO

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> List all known wastes.		<b>MSDS</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<b>SPECIAL INSTRUCTIONS</b>		<b>Hold Time</b>	
--	--	---	--	-----------------------------	--	------------------	--

<b>Relinquished By</b> Print: <i>KP Hulse</i> Sign: <i>KP Hulse</i> Date/Time: <i>4-28-97 1515</i>		<b>Received By</b> Print: <i>Barbara Wright</i> Sign: <i>[Signature]</i> Date/Time: <i>4-28-97 1515</i>		<b>Matrix *</b> S = Soil    LS = Drum Solids SL = Sediment    LI = Drum Liquids SO = Solid    T = Tissue SL = Sludge    WI = Wipe W = Water    L = Liquid O = Oil    V = Vegetation A = Air    X = Other	
<b>Relinquished By</b> Date/Time:		<b>Received By</b> Date/Time:			
<b>Relinquished By</b> Date/Time:		<b>Received By</b> Date/Time:			
<b>Relinquished By</b> Date/Time:		<b>Received By</b> Date/Time:			

<b>FINAL SAMPLE DISPOSITION</b>	<b>Disposal Method</b> e.g. Return to customer, per lab procedure, used in process.	<b>Disposed By</b>	<b>Date/Time</b>
---------------------------------	---	--------------------	------------------

All cans des containing hazardous materials shall be picked up by requestor and returned to parent container or site of origin.

A-6001-500 (07/05)

## VALIDATED RESULTS SHORT REPORT

25 Apr 1997

Customer ID: BOJHZ4  
Lab Sample#: S97E000281

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:47

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
11.18  
< 8.31e-6 %Uncertainty  
uCi/g

Customer ID: BOJHZ5  
Lab Sample#: S97E000282

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:49

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
14.38  
< 7.43e-6 %Uncertainty  
uCi/g

Customer ID: BOJHZ6  
Lab Sample#: S97E000283

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:49

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
10.74  
< 8.98e-6 %Uncertainty  
uCi/g

Customer ID: BOJHZ7  
Lab Sample#: S97E000284

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:49

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
11.23  
< 6.16e-6 %Uncertainty  
uCi/g

Customer ID: BOJHZ8  
Lab Sample#: S97E000285

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:49

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
11.18  
< 8.80e-6 %Uncertainty  
uCi/g

Customer ID: BOJHZ9  
Lab Sample#: S97E000286

Sample Date: 04/24/97 08:40  
Recv. Date: 04/24/97 13:49

## PARAMETER

## RESULTS

## UNITS

-----  
Total Activity by LSC  
Total Act. by LSC: % Uncert.  
Total Activity by LSC (Solid)

-----  
11.15  
< 9.00e-6 %Uncertainty  
uCi/g

**Rust Federal  
Services Northwest**

## CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C# K97-032-2

Page 1 of 1

Collector	HULSE, KARL	Contact/Requestor	PENN, LUCINDA	Tel. No.	6-8991	MSIN	N2-57	FAX
SAF Number	R97-032	Sample Origin	3718-F	Purchase Order/Charge Code	B122A			
Project Title	3718-F Alkali Metal TSD	Logbook #	WM-SAC-H1	Ice Chest #	SM-545 Temp.			
Shipped To (Lab)	222-S	Method of Shipment	Gov Vehicle	Bill of Lading/Air Bill No.	N/A			
Protocol	RCRA	Date Turnaround	45 DAYS	Offsite Property No.	N/A			

Sample No.	Lab. ID	#	Date	Time	Net/Type Container	Sample Analysis	Preservative
D011124		S	4/24/97	0850	(1) 20 P	Rad Screen (Lab specific)	None
D011125		S	4/24/97	0920	(1) 20 P	Rad Screen (Lab specific)	None
D011126		S	4/24/97	0940	(1) 20 P	Rad Screen (Lab specific)	None
D011127		S	4/24/97	0840	(1) 20 P	Rad Screen (Lab specific)	None
D011128		S	4/24/97	0940	(1) 20 P	Rad Screen (Lab specific)	None
D011129		W	4/24/97	0825	(1) 20 P	Rad Screen (Lab specific)	None

**GOPY**

POSSIBLE SAMPLE HAZARDS/REMARKS List all known wastes.	MSDS		Yes <input type="checkbox"/> No <input type="checkbox"/>		SPECIAL INSTRUCTIONS Fax Results to KB..Hulse at 373-7076		Hold Time
	Received By	Date/Time	Received By	Date/Time	Received By	Date/Time	
Relinquished By KB Hulse	Relinquished By	1340	4-24-97	Sign 2/22/97	Print RVCORANDERS	Sign PL Dwyer	Date/Time 4-24-97
Relinquished By	Relinquished By						
Relinquished By	Relinquished By						
Relinquished By	Relinquished By						

Matrix	S	SE	SO	SL	W	O	A	DS	DL	T	WI	L	V	X
= Soil														
= Sediment														
= Solid														
= Sludge														
= Water														
= Oil														
= Air														
= Dried Solids														
= Dye/Liquids														
= Tissue														
= Wipe														
= Liquid														
= Vegetation														
= Other														

FINAL SAMPLE DISPOSITION	Disposal Method e.g. Return to customer, per lab procedure, used in process.	Disposed By	Date/Time

A-6001-500 (07/95)

APPENDIX C

VALIDATED DATA PACKAGE

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Golder Associates Inc.

4104-148th Avenue NE  
Redmond, WA 98052  
Telephone (206) 883-0777  
Fax (206) 882-5498



July 28, 1997

Our ref: 943-1610.170.0400  
943-1610.171.0400  
94-1610/O/688

Waste Management Federal Services of Hanford Inc.  
1820 Terminal Drive, MSIN E6-06  
Richland, Washington 99352

ATTENTION: Ms. Briana Colley

RE: TRANSMITTAL OF DATA VALIDATION REPORTS,  
CONTRACT NO. MSH-SWV-315905

Dear Ms. Colley:

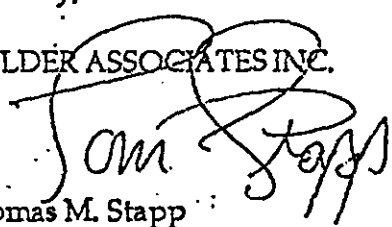
This letter is to transmit the following data validation package:

<u>SAF#</u>	<u>Project</u>	<u>Data Package</u>	<u>Analyses</u>
R97-091	400A Flow Meter Hut	W01649-QES	General Chemistry, Inorganic
R97-032	3718-F Alkali Metals	W01622-QES	Inorganic, PCB's

Please call if you have any questions.

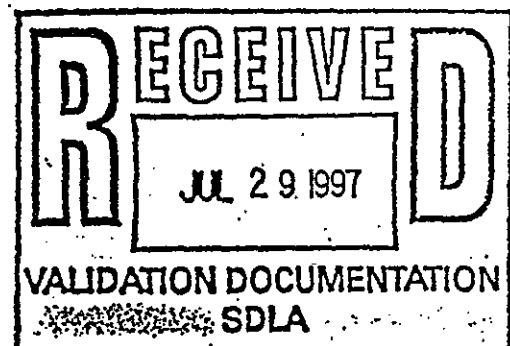
Sincerely,

GOLDER ASSOCIATES INC.

  
Thomas M. Stapp  
Project Manager

TMS/ca

Enclosures



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## MEMORANDUM

TO: 3718-F Alkali Metals TSD, Project QA Record

July 24, 1997

FR: Thomas Stapp, Golder Associates Inc. *TTS*

RE: INORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE:  
W01622-QES (943-1610.171, Filename 1622INO.DOC)

### INTRODUCTION

This memo presents the results of data validation for the analyses indicated below on data package W01622-QES prepared by Quanterra Environmental Services. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0JHZ4	SOIL	INORGANICS	
B0JHZ5	SOIL		
B0JHZ6	SOIL		
B0JHZ7	SOIL	SEE ATTACHMENT 4	
B0JHZ8	SOIL		
B0JHZ9	WATER		

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers

Attachment 2. Summary of Data Qualifications

Attachment 3. Qualified Data Summary and Annotated Laboratory Reports

Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation

Attachment 5. Data Validation Supporting Documentation

### DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

**Precision.** Goals for precision were met.

**Accuracy.** Goals for accuracy were met.

**Detection Limits.** Soil detection limit goals were not met for sodium and lithium as stipulated in Table 2 of "Soil Sampling and Analysis Plan for the 3718-F Alkali Metal Treatment and Storage Facility Closure Activities". Contract required detection limits for the water sample were not indicated.

**Completeness.** The data package was complete for all requested analyses. A total of six (6) samples were validated in this data package with a total of eighteen determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90 percent.

### MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

### MINOR DEFICIENCIES

The following minor deficiency was identified during data validation which required qualification of data.

#### Method Blank

- Sodium was detected in the preparation blank for sample B0JHZ9 and qualifies the associated result for sodium as non-detect. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

### REFERENCES

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington

RFSH 1997, "Soil Sampling and Analysis Plan for the 3718-F Alkali Metal Treatment and Storage Facility Closure Activities" (Project TSD), HNF-SD-ENV-AP-004, Revision 0, May, 1997; RUST Federal Services of Hanford, Richland, Washington.

## ATTACHMENT 1

### GLOSSARY OF DATA REPORTING QUALIFIERS

## Glossary of Inorganic Data Reporting Qualifiers.

- B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

## DATA QUALIFICATION SUMMARY - FORM B-7

SDG: W01622-QES	BY: T. Stapp	DATE: 07/24/97	PAGE <u>1</u> OF <u>1</u>
COMMENTS: INORGANIC			
COMPOUND/ ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
SODIUM	U	B0JHZ9	CONTAMINANT DETECTED IN THE METHOD BLANK

**THE UNIVERSITY OF CHICAGO**

**LIBRARY**

**PHYSICS DEPARTMENT**

**5710 S. UNIVERSITY AVE.**

**CHICAGO, ILL. 60637**

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## Validated Data Summary, Data Package: W01622-QES

Parameter	Sample #	B0JHZ4		B0JHZ5		B0JHZ6		B0JHZ7		B0JHZ8	
	Date	4/24/97		4/24/97		4/24/97		4/24/97		4/24/97	
	Location										
	Depth										
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments										
	Units	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
POTASSIUM	MG/Kg	1020.000		746.000		1050.000		942.000		1360.000	
SODIUM	MG/Kg	175.000	B	531.000	B	194.000	B	174.000	B	218.000	B
LITHIUM	MG/Kg	9.100		29.000		33.100		9.600		30.300	

The decimal places shown do not reflect the precision reported by the laboratory.

Parameter	Sample #	B0JHZ9	
	Date	4/24/97	
	Location		
	Depth		
	Type	Water	
	Comments		
	Units	Results	Q
POTASSIUM	UG/L	1900.000	U
SODIUM	UG/L	364.000	U
LITHIUM	UG/L	4.500	U

The decimal places shown do not reflect the precision reported by the laboratory.

Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA. 99352

Project: 678.23

Category: ICP Metals-6010A (Li,K,Na)  
Method: EPA 6010  
Matrix: SOLID

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97

Client ID: B0JH24

Quanterra ID : 14505-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Potassium	7440-09-7	QCBLK141499-1	05/23/97	05/23/97	1020 MG/KG		536	1
Sodium	7440-23-5	QCBLK141499-1	05/23/97	05/23/97	175 MG/KG	B	536	1
Lithium	7439-93-2	QCBLK141499-1	05/23/97	05/23/97	9.1 MG/KG		5.4	1

RECORD COPY

7/18/97 97072  
000036

Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA 99352

Project: 678.23

Category: ICP Metals-6010A (Li,K,Na)  
Method: EPA 6010  
Matrix: SOLID

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97

Quanterra ID : 14505-002

Client ID: B0JHZ5

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Potassium	7440-09-7	OCBLK141499-1	05/23/97	05/23/97	746 MG/KG		559	1
Sodium	7440-23-5	OCBLK141499-1	05/23/97	05/23/97	531 MG/KG	B	559	1
Lithium	7439-93-2	OCBLK141499-1	05/23/97	05/23/97	29.0 MG/KG		5.6	1

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Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA 99352

Project: 678.23

Category: ICP Metals-6010A (Li,K,Na)  
Method: EPA 6010  
Matrix: SOLID

Client ID: BOJH26

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97  
Quanterra ID : 14505-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Potassium	7440-09-7	QCBLK141499-1	05/23/97	05/23/97	1050 MG/KG		541	1
Sodium	7440-23-5	QCBLK141499-1	05/23/97	05/23/97	194 MG/KG	B	541	1
Lithium	7439-93-2	QCBLK141499-1	05/23/97	05/23/97	33.1 MG/KG		5.4	1

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Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA 99352  
Project: 678.23

Category: ICP Metals-6010A (Li,K,Na)  
Method: EPA 6010  
Matrix: SOLID

Client ID: BOJHZ7

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97

Quanterra ID : 14505-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Potassium	7440-09-7	OCBLK141499-1	05/23/97	05/23/97	942 MG/KG		535	1
Sodium	7440-23-5	OCBLK141499-1	05/23/97	05/23/97	174 MG/KG	B	535	1
Lithium	7439-93-2	OCBLK141499-1	05/23/97	05/23/97	9.6 MG/KG		5.3	1

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Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA 99352

Project: 678.23

Category: ICP Metals-6010A (Li,K,Na)  
Method: EPA 6010  
Matrix: SOLID

Client ID: BDJHZ8

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97  
Quanterra ID : 14505-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Potassium	7440-09-7	OCBLK141499-1	05/23/97	05/23/97	1360 MG/KG		543	1
Sodium	7440-23-5	OCBLK141499-1	05/23/97	05/23/97	218 MG/KG	B	543	1
Lithium	7439-93-2	OCBLK141499-1	05/23/97	05/23/97	30.3 MG/KG		5.4	1

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Rust Federal Services  
Rust Federal Services  
P.O. Box 1970  
Richland, WA 99352

Project: 678.23

Category: ICAP Metals  
Method: EPA 6010  
Matrix: LIQUID

Sample Date : 04/24/97  
Receipt Date : 04/28/97  
Report Date : 06/10/97

Client ID: BOJH29

Quanterra ID : 14506-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual	Detection Limit	Dilution
Potassium	7440-09-7	OCBLK141490-1	05/23/97	05/23/97	1900 UG/L	U	5000	1
Sodium	7440-23-5	OCBLK141490-1	05/23/97	05/23/97	364 UG/L	U	5000	1
Lithium	7439-93-2	OCBLK141490-1	05/23/97	05/23/97	4.5 UG/L	U	50.0	1

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ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION



Environmental  
Services

Quanterra Incorporated  
13715 Rider Trail North  
Earth City, Missouri 63045

314 298-8566 Telephone  
314 298-8757 Fax

## CASE NARRATIVE

Rust Federal Services  
P.O. Box 1970  
Richland, Washington 99352

June 12, 1997

Attention: Karl Pool

---

Project number	:	678.23
Date Received by Lab	:	April 28, 1997
Number of Samples	:	Six (6)
Sample Type	:	(5) Soil and (1) Water
SDG Number	:	W01622
Data Deliverable	:	Standalone

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### I. Introduction

On April 28, 1997, a total of six (6) samples comprised of five (5) soil sample and (1) water sample were received by Quanterra, Richland and were transferred to Quanterra, St. Louis for chemical analyses. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client IDs:

<u>St. Louis ID</u>	<u>RES ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
14505-001	B0JHZ4	70440801	Soil	28-APR-97
14505-002	B0JHZ5	70440802	Soil	28-APR-97
14505-003	B0JHZ6	70440803	Soil	28-APR-97
14505-004	B0JHZ7	70440804	Soil	28-APR-97
14505-005	B0JHZ8	70440805	Soil	28-APR-97
14506-001	B0JHZ9	70440901	Water	28-APR-97

### II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: ICAP Metals (Lithium, Potassium and Sodium) by EPA Method 6010.

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Rust Federal Services  
June 12, 1997  
Project Number: 678.24  
SDG: W01657  
Page 2

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### III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. A Matrix Spike and Matrix Spike Duplicate were performed per the protocol for this SDG.

### IV. Definitions

The following codes were used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank

QCLCS- Quality Control Laboratory Control Sample, Blank Spike

### V. Comments

#### Shipping and Receiving

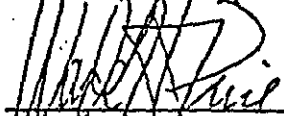
There are no comments or nonconformances associated with the shipping and receiving of the sample.

#### Metals

The ICP digestion was prepped 50 mls to 50 mls for samples 14506-001, 14506-001S and 14506-001SD.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:



Wade H. Price

Project Manager

c:\price\shansford\678.xx\rf622.nar

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Rust Federal  
Services Northwest

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C#  
K97-032-1

Page / of /

Collector HULSE, KARL	Contact/Requestor PENN, LUCINDA	Tel. No. 6-8991 MSIN N2-57 FAX
SAF Number R97-032	Sample Origin 300 AREA	Purchase Order/Charge Code
Project Title 3718-F Alkali Metal TSD	Logbook # WM-SML-H1	Ice Chest # SML-545 Temp.
Shipped To (Lab) Quanterra	Method of Shipment HAND DELIVERED	Bill of Lading/Air Bill No. N/A
Protocol RCRA	Data Turnaround 45 DAYS	Offsite Property No. N/A

Sample No.	Lab. ID	A	Date	Time	No/Type Container	Sample Analysis	Perscrutative
100J1124		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	None
100J1124		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium 100% 70440801	Cool to 4°C
100J1125		S	4/24/97	0920	(1) 20 P	Activity Scan (Lab Specific)	None
100J1125		S	4/24/97	0920	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium 100% 02	Cool to 4°C
100J1126		S	4/24/97	0940	(1) 20 P	Activity Scan (Lab Specific)	None
100J1126		S	4/24/97	0940	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium 100% 03	Cool to 4°C
100J1127		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	None
100J1127		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium 100% 04	Cool to 4°C
100J1128		S	4/24/97	0940	(1) 20 P	Activity Scan (Lab Specific)	None
100J1128		S	4/24/97	0940	(1) 250 P	ICP Metals (6010A), Lithium, Potassium, Sodium 100% 05	Cool to 4°C
100J1129		W	4/24/97	0825	(1) 20 P	Activity Scan (Lab Specific)	None
100J1129		W	4/24/97	0825	(1) 500 P	ICP Metals (6010A), Lithium, Potassium, Sodium	11N03

POSSIBLE SAMPLE HAZARDS/REMARKS List all known wastes.	MSDS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	SPECIAL INSTRUCTIONS Hold Time
SD6-W01622		RECORD COPY

Relinquished By Print Sign Date/Time 1515 K.P. Hulse KB Hulse 4-28-97	Received By Print Sign Date/Time 1515 Theresa W. Hulse TW Hulse 4-28-97	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By Date/Time	Received By Date/Time	
Relinquished By Date/Time	Received By Date/Time	
Relinquished By Date/Time	Received By Date/Time	

FINAL SAMPLE DISPOSITION	Relinquished By Date/Time
--------------------------	---------------------------

Relinquished By Date/Time

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

## INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	<u>D</u>	E
PROJECT: 3718 F Alkali Metals TSD			DATA PACKAGE: 943-1610-171		
VALIDATOR: T-STAPP		LAB: QUANTERRA		DATE: July 22 '97	
CASE:			SDG: WO1622-QES		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/ICP	<input type="checkbox"/> CLP/GFAA	<input type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX BOJHZ4, BOJHZ5, BOJHZ6, BOJHZ7,					
BOJHZ8 / SOIL					
BOJHZ9 / WATER					

## 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/AIs a case narrative present? . . . . . Yes No N/A

Comments: \_\_\_\_\_

## 2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments: \_\_\_\_\_

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . ☒ Yes No N/A  
 Are initial calibrations acceptable? . . . ☒ Yes No N/A  
 Are ICP interference checks acceptable? . . . ☒ Yes No N/A  
 Were ICV and CCV checks performed on all instruments? . . . ☒ Yes No N/A  
 Are ICV and CCV checks acceptable? . . . ☒ Yes No N/A

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? ☒ Yes No N/A  
 Are ICB and CCB results acceptable? . . . NOTE ① . . . ☒ Yes ☒ No N/A  
 Were preparation blanks analyzed? . . . ☒ Yes No N/A  
 Are preparation blank results acceptable? . . . NOTE ② . . . ☒ Yes ☒ No N/A  
 Were field/trip blanks analyzed? . . . NOTE ③ . . . ☒ Yes No ☒ N/A  
 Are field/trip blank results acceptable? . . . ☒ Yes No ☒ N/A

Comments: ① Positive and negative calibration blank results are detected however all sample results are above 5x rule and no qualification applies. ② Detect in prep. blank for Sodium qualifies associated water sample (BOJHZ9) result as non-detect (U). See blank summary page. ③ Field QC not identified with this SDG.

5. ACCURACY

Were spike samples analyzed? . . . ☒ Yes No N/A  
 Are spike sample recoveries acceptable? . . . ☒ Yes No N/A  
 Were laboratory control samples (LCS) analyzed? . . . ☒ Yes No N/A  
 Are LCS recoveries acceptable? . . . ☒ Yes No N/A

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

## 6. PRECISION

Were laboratory duplicates analyzed? . . . NOTE ① . . . Yes No N/A  
 Are laboratory duplicate samples RPD values acceptable? . . . Yes No N/A  
 Were ICP serial dilution samples analyzed? . . . Yes No N/A  
 Are ICP serial dilution %D values acceptable? . . . NOTE ② . . . Yes No N/A  
 Are field duplicate RPD values acceptable? . . . NOTE ③ . . . Yes No N/A  
 Are field split RPD values acceptable? . . . Yes No N/A

Comments: ① MS/MSD recoveries are substituted for duplicate analysis and all RPD are within limits. ② ICP serial dilution %D values for K and Na exceed 10% however criteria for qualification does not apply. ③ Field QC has not been identified in this SDB and has not been evaluated.

## 7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . Yes No N/A  
 Are duplicate injection %RSD values acceptable? . . . Yes No N/A  
 Were analytical spikes performed as required? . . . Yes No N/A  
 Are analytical spike recoveries acceptable? . . . Yes No N/A  
 Was MSA performed as required? . . . Yes No N/A  
 Are MSA results acceptable? . . . Yes No N/A

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## 8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . Yes No N/A  
 Are all results supported in the raw data? . . . Yes No N/A  
 Are results calculated properly? . . . Yes No N/A  
 Do results meet the CRDLs? . . . NOTE ① . . . Yes No N/A

Comments: ① CRDL's as indicated in Table 2 of the Soil Sampling and Analysis Plan have not been met by the laboratory for Sodium and Lithium (1.4 and 0.2 mg/Kgm respectively), however qualification of results is not applied. CRDL's have not been established for water samples.

3  
BLANKS  
SUMMARY

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Associated result  $< 5 \times$  the circled value ( $= 735 \mu\text{g/l}$ ) is qualified as non-defect.

FORM III - IN (Sample BOJHZ9)

FORM III - IN

(Sample B0JHZ9)

SW-84

TDS 970722

## HOLDING TIME SUMMARY

[illegible]

MHC-SD-EH-SPP-002, Rev. 2

**B-1**

24

# Sample Disposition Record

Control #: SDR97-036

Revision#: 0

Date Initiated: 4/30/97

## Section 1 - BACKGROUND

SAFH: R97-032

OU: N/A

Project ID: TSD

Task ID:

Sampling Event: 300 Area 3718-F TSD closure

Laboratory: Quanterra

Project Coordinator: Steele, SM

Task Manager: Sonnichsen, JC

## Section 2 - SAMPLE INFORMATION

Number of Samples: 6

ID Numbers: B0JHZ4, B0JHZ5, B0JHZ6, B0JHZ7, B0JHZ8, B0JHZ9

MATRIX: Soil

Collection Date: 04/24/97

## Section 3 - ISSUE

Class: Lab Direction

NCR Number: N/A

Type: Clarification of Direction

Description: Water and soil samples were received under the same COC. The lab would like to create two SDGs.

N/A

NCR Validation (Print/Sign)

Date

## Section 4 - DISPOSITION

Type: Use As Is

Description: The water sample should be analyzed with the soils in the same SDG. The water sample should be reported with water units. Also note in case narrative for SDG W01622.

Steele, SM

Project Coordinator (Print/Sign)

Date

Sonnichsen, JC

Task Manager (Print/Sign)

Date

N/A

QA (Print/Sign)

Date

## Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A

Inspection Results: N/A

N/A

Inspector (Print/Sign)

Date

# Sample Disposition Record

Control #: SDR97-039

Revision#: 0

Date Initiated: 6/3/97

## Section 1 - BACKGROUND

SAF#: R97-032

OU: N/A

Project ID: TSD

Task ID:

Sampling Event: 300 Area 3718-F TSD closure

Laboratory: Quanterra

Project Coordinator: Steele, SM

Task Manager: Sonnichsen, JC

## Section 2 - SAMPLE INFORMATION

Number of Samples: 5

ID Numbers: B0JHZ4, B0JHZ5, B0JHZ6, B0JHZ7, B0JHZ8

MATRIX: Soil

Collection Date: 04/24/97

## Section 3 - ISSUE

Class: Lab Direction

NCR Number: N/A

Type: Other-Additional Analytical Scope

Description: Customer would like to analyze the soil samples in SDG W01622 for PCB's.

N/A

NCR Validation (Print/Sign)

Date

## Section 4 - DISPOSITION

Type: Use As Is

Description: Quanterra will analyze the soil samples for PCB's only, by method 8080. The analysis is to be done on a "Priority turnaround" of 15 days starting 6/4/97. The analysis results will be reported in SDG W01622A.

Steele, SM

Project Coordinator (Print/Sign)

Date

Sonnichsen, JC L. L. Penn

Task Manager (Print/Sign)

Date

N/A

QA (Print/Sign)

Date

## Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A

Inspection Results: N/A

N/A

Inspector (Print/Sign)

Date

## MEMORANDUM

TO: 3718-F Alkali Metals TSD Project QA Record

August 5, 1997

FR: Thomas Stapp, Golder Associates Inc. *TMS*

RE: PCB DATA VALIDATION SUMMARY FOR DATA PACKAGE  
W01622-QES (Project: 943-1610.171 Filename: 1622PEST.DOC)

### INTRODUCTION

This memo presents the results of data validation for the analysis indicated below on data package W01622-QES prepared by Quanterra Environmental Services. Sample information is provided in the following table.

SAMPLE ID	COMMENTS	ANALYSIS	MEDIA
B0JHZ4		PESTICIDE/PCB	SOIL
B0JHZ5			SOIL
B0JHZ6		SEE ATTACHMENT 4	SOIL
B0JHZ7			SOIL
B0JHZ8			SOIL

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information as indicated below:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

### DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

**Precision.** Goals for precision were met.

**Accuracy.** Goals for accuracy were met with the exception of the minor deficiency identified below.

**Completeness.** The data package was complete for all requested analyses. A total of five samples were validated in this data package with a total of 35 determinations reported,

*Revised*  
*970805*  
*TMS*

four of which were deemed valid. This results in a completeness of 11 percent, which does not meet the 90 percent objective of the work plan.

**Detection Limits.** Detection limit goals have not been established for this SDG, therefore detection limits have not been evaluated.

### MAJOR DEFICIENCIES

The following major deficiencies were identified during data validation which required qualification of data as unusable.

#### Holding Times

- The holding time until extraction was exceeded by greater than twice the allowable limit and associated non-detects have been qualified as unusable (UR). Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

### MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

#### Holding Times

- The holding time until extraction was exceeded by greater than twice the allowable limit and associated detects have been qualified as estimated (J). Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

#### Surrogates

- Surrogate compound recoveries for all samples were out of established control limits but above 10%. Attachments 2 and 5 provide a summary of the samples affected, qualification applied, and supporting documentation.

### DATA REPORTING

Enclosed is a sample disposition record (See Attachment 4) which indicates the date of request for analysis of PCB's for the indicated samples. This information is not indicated on the Chain of Custody.

### REFERENCES

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

Data Package ID: W01622-QES

Analysis: PCB

WHC 1994, Environmental and Waste Characterization Analytical Data Validation,  
Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September  
7, 1994; Westinghouse Hanford Company, Richland, Washington.

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Revised:  
TMS 970805

CONFIDENTIAL  
This document contains information that is exempt from public release under the Freedom of Information Act, 5 U.S.C. 552, and is to be controlled, stored, handled, transmitted, and disposed of in accordance with the provisions of Executive Order 11652, February 2, 1972, and the provisions of the Department of Defense Manual, Volume 1, Chapter 1, Section 1.2, dated 1961, and the provisions of the Department of Defense Manual, Volume 1, Chapter 1, Section 1.2, dated 1961, and the provisions of the Department of Defense Manual, Volume 1, Chapter 1, Section 1.2, dated 1961.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

## GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.
- NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.
- UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.
- UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

11/18/98 970724

ATTACHMENT 2  
SUMMARY OF DATA QUALIFICATIONS

## DATA QUALIFICATION SUMMARY - FORM B-7

SDG: W01622-QES	REVIEWER: T. STAPP	DATE: 07-24-97	PAGE 1 OF 1
COMMENTS: PESTICIDE/PCB			
COMPOUND/ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260	IUR	ALL	HOLDING TIME EXCEEDED
AROCLOR 1254	J	BOJHZ4 BOJHZ5 BOJHZ6 BOJHZ7	SURROGATE RECOVERY FOR DCB OR TCMX WAS OUT OF LIMITS

Revised  
TMS 970805  
06

ATTACHMENT 3

QUALIFIED DATA SUMMARY and ANNOTATED LABORATORY REPORTS

## Validated Data Summary, Data Package: W01622-QES

Parameter	Sample #	B0JHZA		B0JH25		B0JH26		B0JH27		B0JH28	
	Date	4/2A/97		4/2A/97		4/2A/97		4/2A/97		4/2A/97	
	Location										
	Depth										
	Type	Soil		Soil		Soil		Soil		Soil	
	Comments										
	Units	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
AROCLOR-1016	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR
AROCLOR-1221	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR
AROCLOR-1232	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR
AROCLOR-1242	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR
AROCLOR-1248	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR
AROCLOR-1254	UG/Kg	88.000	J	15000.000	J	38.000	J	330.000	J	36.000	UR
AROCLOR-1260	UG/Kg	35.000	UR	37.000	UR	36.000	UR	35.000	UR	36.000	UR

The decimal places shown do not reflect the precision reported by the laboratory.

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ID  
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOJHZ4

Lab Name: QUANTERRA, MO Contract: 678-23  
 Lab Code: ITMO Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: W01622A  
 Matrix: (soil/water) SOIL Lab Sample ID: 14505-001  
 Sample wt/vol: 30.3 (g/ml) G Lab File ID: \_\_\_\_\_  
 Level: (low/med) LOW Date Sampled: 04-24-97  
 % Moisture: not dec. 7 dec. \_\_\_\_\_ Date Extracted: 06-10-97  
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-17-97  
 GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Dilution Factor: 1

CAS NO. Compound

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Q

12674-11-2-----Aroclor-1016	35	<del>Y</del> <del>U</del> <del>S</del>	UR
11104-28-2-----Aroclor-1221	35	<del>Y</del> <del>U</del> <del>S</del>	UR
11141-16-5-----Aroclor-1232	35	<del>Y</del> <del>U</del> <del>S</del>	UR
53469-21-9-----Aroclor-1242	35	<del>Y</del> <del>U</del> <del>S</del>	UR
12672-29-6-----Aroclor-1248	35	<del>Y</del> <del>U</del> <del>S</del>	UR
11097-69-1-----Aroclor-1254	88	<del>Y</del> <del>U</del> <del>S</del>	UR
11096-82-5-----Aroclor-1260	35	<del>Y</del> <del>U</del> <del>S</del>	UR

U: Concentration of analyte is less than the value given.

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PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOJHZ5

Lab Name: QUANTERRA, MO Contract: 678-23  
 Lab Code: ITMO Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: W01622A  
 Matrix: (soil/water) SOIL Lab Sample ID: 14505-002  
 Sample wt/vol: 30.1 (g/ml) G Lab File ID: \_\_\_\_\_  
 Level: (low/med) LOW Date Sampled: 04-24-97  
 % Moisture: not dec. 10 dec. \_\_\_\_\_ Date Extracted: 06-10-97  
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-17-97  
 GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Dilution Factor: 1

CAS NO.

Compound

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

Q Q

12674-11-2-----Aroclor-1016	37	<u>U</u>	<u>UR</u>
11104-28-2-----Aroclor-1221	37	<u>U</u>	<u>UR</u>
11141-16-5-----Aroclor-1232	37	<u>U</u>	<u>UR</u>
53469-21-9-----Aroclor-1242	37	<u>U</u>	<u>UR</u>
12672-29-6-----Aroclor-1248	37	<u>U</u>	<u>UR</u>
11097-69-1-----Aroclor-1254	15000	<u>U</u>	<u>UR</u>
11096-82-5-----Aroclor-1260	37	<u>U</u>	<u>UR</u>

U: Concentration of analyte is less than the value given.

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## EPA SAMPLE NO.

BOJH26

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

CAS NO.

Compound

12674-11-2-----Aroclor-1016	36	UR
11104-28-2-----Aroclor-1221	36	UR
11141-16-5-----Aroclor-1232	36	UR
53469-21-9-----Aroclor-1242	36	UR
12672-29-6-----Aroclor-1248	36	UR
11097-69-1-----Aroclor-1254	38	UR
11096-82-5-----Aroclor-1260	36	UR

U: Concentration of analyte is less than the value given.

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1D  
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOJHZ7

Lab Name: QUANTERRA, MO Contract: 678-23  
 Lab Code: ITMO Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: W01622A  
 Matrix: (soil/water) SOIL Lab Sample ID: 14505-004  
 Sample wt/vol: 30.3 (g/ml) G Lab File ID: \_\_\_\_\_  
 Level: (low/med) LOW Date Sampled: 04-24-97  
 % Moisture: not dec. 6 dec. \_\_\_\_\_ Date Extracted: 06-10-97  
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-17-97  
 GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Dilution Factor: 1

CAS NO. Compound CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

12674-11-2-----Aroclor-1016	35	<del>443</del>	UR
11104-28-2-----Aroclor-1221	35	<del>8</del>	UR
11141-16-5-----Aroclor-1232	35	<del>8</del>	UR
53469-21-9-----Aroclor-1242	35	<del>8</del>	UR
12672-29-6-----Aroclor-1248	35	<del>8</del>	UR
11097-69-1-----Aroclor-1254	330	<del>8</del>	UR
11096-82-5-----Aroclor-1260	35	<del>8</del>	UR

U: Concentration of analyte is less than the value given.

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1D  
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOJHZ8

Lab Name: QUANTERRA, MO Contract: 678-23  
 Lab Code: ITMO Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: W01622A  
 Matrix: (soil/water) SOIL Lab Sample ID: 14505-005  
 Sample wt/vol: 30.0 (g/ml) G Lab File ID: \_\_\_\_\_  
 Level: (low/med) LOW Date Sampled: 04-24-97  
 ‡ Moisture: not dec. 8 dec. \_\_\_\_\_ Date Extracted: 06-10-97  
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-17-97  
 GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Dilution Factor: 1

CAS NO.

Compound

CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/KG

12674-11-2-----Aroclor-1016	36	UR
11104-28-2-----Aroclor-1221	36	UR
11141-16-5-----Aroclor-1232	36	UR
53469-21-9-----Aroclor-1242	36	UR
12672-29-6-----Aroclor-1248	36	UR
11097-69-1-----Aroclor-1254	36	UR
11096-82-5-----Aroclor-1260	36	UR

UR: Concentration of analyte is less than the value given.

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Page 1 of 1

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

Quanterra Incorporated  
13715 Rider Trail North  
Earth City, Missouri 63045

314 298-8566 Telephone  
314 298-8757 Fax

## CERTIFICATE OF ANALYSIS

Rust Federal Services  
P.O. Box 1970  
Richland, Washington 99352

June 27, 1997

Attention: Karl Pool

---

Project number	:	678.23
Date Received by Lab	:	April 28, 1997
Number of Samples	:	Five (5)
Sample Type	:	(5) Soil
SDG Number	:	W01622A
Data Deliverable	:	Standalone

---

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### I. Introduction

On April 28, 1997, a total of six (6) samples comprised of five (5) soil sample and (1) water sample were received by Quanterra, Richland and were transferred to Quanterra, St. Louis for chemical analyses. On June 4, 1997, additional analyses were requested for the soil samples in this SDG by Jodie Carnes. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client IDs:

<u>St. Louis ID</u>	<u>RES ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
14505-001	BOJHZ4	70440801	Soil	28-APR-97
14505-002	BOJHZ5	70440802	Soil	28-APR-97
14505-003	BOJHZ6	70440803	Soil	28-APR-97
14505-004	BOJHZ7	70440804	Soil	28-APR-97
14505-005	BOJHZ8	70440805	Soil	28-APR-97

### II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Additional Analyses requested: PCBs by EPA Method 8080.

TM 897072  
125606

Rust Federal Services  
June 27, 1997  
Project Number: 678.23  
SDG: W01622A  
Page 2

RECORD COPY

### III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. A Matrix Spike and Matrix Spike Duplicate were performed per the protocol for this SDG.

### IV. Definitions

The following codes were used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank

QCLCS- Quality Control Laboratory Control Sample, Blank Spike

### V. Comments

#### Shipping and Receiving

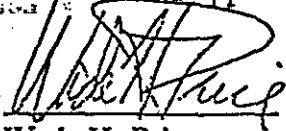
There are no comments or nonconformances associated with the shipping and receiving of the sample.

#### PCBs

There are no comments or nonconformances associated with this analysis.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:



Wade H. Price

Project Manager

e:\price\Shanford\678.xx\rfsl622a.coa

TMS 970723  
600007-1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

TEL. No. 6-8991 NISIN N2-57 FAX

Contract/Requestor  
PENN, LUCINDA

Sample Origin 300 AREA

1 H - 7 K/S - WM

Method of Shipment *Hand Delivered*

**5 DAYS** **INTERNATIONAL**

N/A

2/4

1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 26

IN. N2-57 NI

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1K97-(1)32-1

Sample No.	Lab. ID	#	Date	Time	Sample Container	Sample Analysis	Percentage
10J1124		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	
10J1124		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A) Lithium, Potassium, Sodium	100% 70440801
10J1125		S	4/24/97	0920	(1) 20 P	Activity Scan (Lab Specific)	
10J1125		S	4/24/97	0920	(1) 250 P	ICP Metals (6010A) Lithium, Potassium, Sodium	100% 02
10J1126		S	4/24/97	0740	(1) 20 P	Activity Scan (Lab Specific)	
10J1126		S	4/24/97	0740	(1) 250 P	ICP Metals (6010A) Lithium, Potassium, Sodium	100% 03
10J1127		S	4/24/97	0840	(1) 20 P	Activity Scan (Lab Specific)	
10J1127		S	4/24/97	0840	(1) 250 P	ICP Metals (6010A) Lithium, Potassium, Sodium	100% 04
10J1128		S	4/24/97	0740	(1) 20 P	Activity Scan (Lab Specific)	
10J1128		S	4/24/97	0740	(1) 250 P	ICP Metals (6010A) Lithium, Potassium, Sodium	100% 05
10J1129		W	4/24/97	0825	(1) 20 P	Activity Scan (Lab Specific)	
10J1129		W	4/24/97	0825	(1) 300 P	ICP Metals (6010A) Lithium, Potassium, Sodium	

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RECORD COPY

S	=	Sol	LS	=	1000 Solids
SE	=	Sediment	EL	=	1000 Liquid
SO	=	Solid	T	=	Trace
SL	=	Slight	WI	=	Wine
W	=	Water	L	=	Liquid
O	=	Oil	V	=	Vegetation
A	=	Air	X	=	Other

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

1. **የግብርና ሚኒስቴር**

**NOTES**

# Sample Disposition Record

Control #: SDR97-039

Revision#: 0

Date Initiated: 6/3/97

## Section 1 - BACKGROUND

SAF#: R97-032

OU: N/A

Project ID: TSD

Task ID:

Sampling Event: 300 Area 3718-F TSD closure

Laboratory: Quanterra

Project Coordinator: Steele, SM

Task Manager: Sonnichsen, JC

## Section 2 - SAMPLE INFORMATION

Number of Samples: 5

ID Numbers: BOJHZ4, BOJHZ5, BOJHZ6, BOJHZ7, BOJHZ8

MATRX: Soil

Collection Date: 04/24/97

## Section 3 - ISSUE

Class: Lab Direction

NCR Number: N/A

Type: Other-Additional Analytical Scope

Description: Customer would like to analyze the soil samples in SDG W01622 for PCB's.

N/A

NCR Validation (Print/Sign)

Date

## Section 4 - DISPOSITION

Type: Use As Is

Description: Quanterra will analyze the soil samples for PCB's only, by method 8080. The analysis is to be done on a "Priority turnaround" of 15 days starting 6/4/97. The analysis results will be reported in SDG W01622A.

Steele, SM

Project Coordinator (Print/Sign)

Date

Sonnichsen, JC L.L. Penn

Task Manager (Print/Sign)

Date

N/A

QA (Print/Sign)

Date

## Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A

Inspection Results: N/A

N/A

Inspector (Print/Sign)

Date

# Sample Disposition Record

Control #: SDR97-036

Revision#: 0

Date Initiated: 4/30/97

## Section 1 - BACKGROUND

SAF#: R97-032

OU: N/A

Project ID: TSD

Task ID:

Sampling Event: 300 Area 3718-F TSD closure

Laboratory: Quanterra

Project Coordinator: Steele, SM

Task Manager: Sonnichsen, JC

## Section 2 - SAMPLE INFORMATION

Number of Samples: 6

ID Numbers: B0JHZ4, B0JHZ5, B0JHZ6, B0JHZ7, B0JHZ8, B0JHZ9

MATRIX: Soil

Collection Date: 04/24/97

## Section 3 - ISSUE

Class: Lab Direction

NCR Number: N/A

Type: Clarification of Direction

Description: Water and soil samples were received under the same COC. The lab would like to create two SDGs.

N/A

NCR Validation (Print/Sign)

Date

## Section 4 - DISPOSITION

Type: Use As Is

Description: The water sample should be analyzed with the soils in the same SDG. The water sample should be reported with water units. Also note in case narrative for SDG W01622.

Steele, SM

Project Coordinator (Print/Sign)

Date

Sonnichsen, JC

Task Manager (Print/Sign)

Date

N/A

QA (Print/Sign)

Date

## Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A

Inspection Results: N/A

N/A

Inspector (Print/Sign)

Date

# Sample Disposition Record

Control #: SDR97-036

Revision#: 0

Date Initiated: 4/30/97

## Section 1 - BACKGROUND

SAF#: R97-032

OU: N/A

Project ID: TSD

Task ID:

Sampling Event: 300 Area 3718-F TSD closure

Laboratory: Quanterra

Project Coordinator: Steele, SM

Task Manager: Sonnichsen, JC

## Section 2 - SAMPLE INFORMATION

Number of Samples: 6

ID Numbers: B0JHZ4, B0JHZ5, B0JHZ6, B0JHZ7, B0JHZ8, B0JHZ9

MATRX: Soil

Collection Date: 04/24/97

## Section 3 - ISSUE

Class: Lab Direction

NCR Number: N/A

Type: Clarification of Direction

Description: Water and soil samples were received under the same COC. The lab would like to create two SDGs.

N/A

NCR Validation (Print/Sign)

Date

## Section 4 - DISPOSITION

Type: Use As Is

Description: The water sample should be analyzed with the soils in the same SDG. The water sample should be reported with water units. Also note in case narrative for SDG W01622.

Steele, SM

Project Coordinator (Print/Sign)

Date

Sonnichsen, JC

Task Manager (Print/Sign)

Date

N/A

QA (Print/Sign)

Date

## Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A

Inspection Results: N/A

N/A

Inspector (Print/Sign)

Date



## PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 3718-F Alkali Metals TSD	DATA PACKAGE: 943-1610.171				
VALIDATOR: T. STAPP	LAB: QUANTERRA		DATE: JULY 23 '97		
CASE:	SDG: WJ01622-QES				
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/90	<input checked="" type="checkbox"/> SW-846 8080	<input type="checkbox"/> SW-846 8081	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX BOJHZ4, BOJHZ5, BOJHZ6, BOJHZ7, BOJHZ8 / SOIL					

## 1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . ☒ Yes ☐ No ☐ N/AIs a case narrative present? . . . . . ☒ Yes ☐ No ☐ N/A

Comments: \_\_\_\_\_

## 2. HOLDING TIMES

Are sample holding times acceptable? . . . . . ☒ Yes ☒ No ☐ N/A

Comments: Holding time until extraction has been exceeded by greater than twice the allowable limit of 14 days. Defects are qualified as estimated (J) and non-defects are rejected (UR).

## 3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

## 3.1 INSTRUMENT PERFORMANCE (METHOD 8080 AND 8081)

Are DDT retention times acceptable . . . . . ☒ Yes ☐ No ☒ N/AAre calibration standard retention times acceptable? . . . . . ☒ Yes ☐ No ☒ N/AAre DDT and endrin breakdowns acceptable? . . . . . ☒ Yes ☐ No ☒ N/A

## PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are DBC retention times acceptable? . . . . . Yes No N/A  
 Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A  
 Comments: \_\_\_\_\_

## 3.2 CALIBRATIONS (METHOD 8080 AND 8081)

Are EVAL standard calibration factors and  
 %RSD values acceptable? . . . . . Yes No N/A

Are quantitation column calibration factor  
 %RSD values acceptable? . . . . . Yes No N/A

Were the analytical sequence requirements met? . . . . . Yes No N/A

Are continuing calibration %D values acceptable? NOTE ① . . . . . Yes No N/A

Comments: ① ENDING Calibration %Difference values exceeded 15% however only the continuing calibration will be considered as associated with samples from this SDG and the N/A % Differences are acceptable. No qualification applies.

## 3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Was the initial calibration sequence performed? . . . . . Yes No N/A

Was the resolution acceptable in the resolution check mix? . . Yes No N/A

Is resolution acceptable in the PEM, INDA and INDB? . . . . . Yes No N/A

Are DDT and Endrin breakdowns acceptable? . . . . . Yes No N/A

Are retention times in PEMs and calibration mixes acceptable? . Yes No N/A

Are RPD values in the PEMs acceptable? . . . . . Yes No N/A

Are %RSD values acceptable? . . . . . Yes No N/A

Comments: \_\_\_\_\_

## 3.4 CALIBRATION VERIFICATION (3/90 SOW)

Were the analytical sequence requirements met? . . . . . Yes No N/A

Is resolution acceptable in the PEMs? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

## PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are retention times acceptable in the  
PEMs, INDA and INDB mixes? . . . . .

Yes

No

N/A

Are RPD values in the PEMs acceptable? . . . . .

Yes

No

N/A

Are the DDT and endrin breakdowns acceptable? . . . . .

Yes

No

N/A

Was GPC cleanup performed? . . . . .

Yes

No

N/A

Is the GPC calibration check acceptable? . . . . .

Yes

No

N/A

Was Florisil cleanup performed? . . . . .

Yes

No

N/A

Is the Florisil performance check acceptable? . . . . .

Yes

No

N/A

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## 4. BLANKS

Were laboratory blanks analyzed? . . . . .

Yes

No

N/A

Are laboratory blank results acceptable? . . . . .

Yes

No

N/A

Were field/trip blanks analyzed? . . . . .

NOTE ①

Yes

No

N/A

Are field/trip blank results acceptable? . . . . .

Yes

No

N/A

Comments: ① Field QC has not been identified in  
this SDG and has not been evaluated.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## 5. ACCURACY

Were surrogates analyzed? . . . . .

Yes

No

N/A

Are surrogate recoveries acceptable? . . . . .

Yes

No

N/A

Were MS/MSD samples analyzed? . . . . .

Yes

No

N/A

Are MS/MSD results acceptable? . . . . .

Yes

No

N/A

Were LCS samples analyzed? . . . . .

NOTE ②

Yes

No

N/A

Are LCS results acceptable? . . . . .

Yes

No

N/A

Comments: ① Surrogate recoveries are unacceptable for all sample  
analyses. See Surrogate recovery Summary page. All associated  
results are qualified as estimated (Fluo).

② Not required when valid ms/msd is present.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## PESTICIDE/PCB DATA VALIDATION CHECKLIST

## 6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . ☒ Yes No N/AAre laboratory duplicate results acceptable? . . . . . Yes No ☒ N/AAre field duplicate RPD values acceptable? . NOTE ① . . . . . Yes No ☒ N/AAre field split RPD values acceptable? . . . . . Yes No ☒ N/A

Comments: ① Field QC has not been identified in this SDG and has not been evaluated.

## 7. SYSTEM PERFORMANCE

Is chromatographic performance acceptable? . . . . . ☒ Yes No N/AAre positive results resolved acceptably? . . . . . ☒ Yes No N/A

Comments:

## 8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . NOTE ① . . . . . ☒ Yes No N/AIs compound quantitation acceptable? . . . . . ☒ Yes No N/A

Comments: ① Performed by pattern recognition, and comparison to standards.

## 9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . ☒ Yes No N/AAre all results supported in the raw data? . . . . . ☒ Yes No N/ADo results meet the CRQLs? . . . . . NOTE ① . . . . . Yes No ☒ N/A

Comments: ① CRQL's have not been established for this SDG. Method detection limits have been confirmed. Practical Quantitation limits for each sample have been confirmed.

TNA  
9707

2F  
SOIL PCB SURROGATE RECOVERY

Lab Name: QUANTERRA, MO

Contract: 678-23

Lab Code: ITMO Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: W01622A

Level: (low/med) LOW

EPA SAMPLE NO.	S1 (DCB) #	S2 (TCMX) #
01 PELK01	79	55 *
02 PSPK01	86	66
03 BOJHZ4	131	54 *
04 BOJHZ4MS	115	93
05 BOJHZ4MSD	82	66
06 BOJHZ5	249 *	83
07 BOJHZ6	68	40 *
08 BOJHZ7	80	53 *
09 BOJHZ8	58	41 *

ADVISORY  
QC LIMITS  
(48-210)  
(61-153)

S1 (DCB) = Decachlorobiphenyl  
S2 (TCMX) = Tetrachlorom-m-xylene

# Column to be used to flag recovery values

\* Values outside of QC limits

D Surrogates diluted out

page 1 of 1

FORM II PEST-2

1/87 Rev.

Associated Samples for those values  
circled above are qualified as estimated  
for all analytes reported. (J/UT)

TMS 970723

## HOLDING TIME SUMMARY

[illegible]

KHC-SD-EN-SPP-002, Rev. 2

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Revised TM  
970805

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